CLAIMS

What is claimed is:

1. A hydraulic manifold assembly for activation and deactivation of valves in a multiple-cylinder internal combustion engine having a pressurized oil source and hydraulically-operable deactivation valve lifters, comprising:

a) a first plate having on one side thereof a first mating surface formed in a first pattern delineating first portions of various oil flow galleries in said assembly;

b) a second plate having on one side thereof a second mating surface formed in a second pattern delineating second portions of said various oil flow galleries and matable with said first surface; and

c) a bonding zone including said first and second mating surfaces wherein said first and second plates are attached to each other,

wherein at least one of said first and second plates is formed of a polymer.

2. A manifold assembly in accordance with Claim 1 wherein said bonding zone is a fusion zone wherein said first and second surfaces are fused together.

3. A manifold assembly in accordance with Claim 2 wherein said fusion is created by vibration and pressure.

4. A manifold assembly in accordance with Claim 3 wherein the frequency of said vibration is about 120 to about 240 Hz and the amplitude of said pressure is about 200 to about 400 pounds per square inch of either of said first and second mating surfaces.

5. A manifold assembly in accordance with Claim 1 further comprising a plurality of solenoid valves mounted on said second plate for variably and controllably regulating flow of oil to and from predetermined ones of said deactivation valve lifters.

6. A manifold assembly in accordance with Claim 5 wherein said solenoid valves are fusibly mounted to said second plate.

7. A manifold assembly in accordance with Claim 5 further comprising a retainer attached to said second plate and having a plurality of buckets for retaining said plurality of solenoid valves in operational position with respect to said second plate.

8. A manifold assembly in accordance with Claim 7 wherein said retainer further comprises a plurality of tabs for attaching said retainer to said second plate.

9. A manifold assembly in accordance with Claim 8 wherein said manifold assembly is free of threaded fasteners.

10. A manifold assembly in accordance with Claim 8 wherein said retainer includes a first plate and a second plate which are joined as by fusing to form said retainer.

11. A manifold assembly in accordance with Claim 10 wherein said retainer includes a hollow member for use as a positive crankcase ventilation baffle, said member having an entry port and an exit port and being connectable to an intake manifold of said internal combustion engine.

12. A manifold assembly in accordance with Claim 11 wherein said retainer further comprises a plurality of internal walls forming a labyrinthine pathway for engine vapors.

13. A manifold assembly in accordance with Claim 1 further comprising a global oil supply gallery and a plurality of individual oil supply galleries, wherein said global supply gallery is in communication with each of said individual supply galleries via a bleed passage formed in at least one of said first and second plates.

14. A manifold assembly in accordance with Claim 13 wherein said bleed passage includes an oil restriction orifice.

15. A manifold assembly in accordance with Claim 14 wherein said orifice has a diameter of about 0.4 to about 0.6 mm.

16. A manifold assembly in accordance with Claim 1 wherein said polymer is glass-filled.

17. A manifold assembly in accordance with Claim 16 wherein said glass-filled polymer is a high temperature grade.

18. A manifold assembly in accordance with Claim 16 wherein said glass-filled polymer is PPA.

19. A manifold assembly in accordance with Claim 1 wherein said second pattern is a mirror image of said first pattern.

20. A method for joining first and second components in a hydraulic manifold assembly, comprising the steps of:

a) providing a first mating surface on said first component;

b) providing a second mating surface on said second component;

c) urging said first and second mating surfaces together under a load on either of said first and second components; and

d) vibrating said first and second mating surfaces past one another to cause said first and second surfaces to fuse.

21. A method for joining first and second components in a hydraulic manifold assembly in accordance with Claim 20 wherein said urging step includes loading the mating surfaces together at about 200 to about 400 pounds per square inch and said vibrating step is made at a frequency of about 120 to about 240 Hz.

22. A method for joining first and second components in a hydraulic manifold assembly in accordance with Claim 20 wherein at least one of said first and second components is formed of a high temperature grade glass-filled polymer.